| | EXPERIMENT No. | Progention 1 |
|--------|--|---|
| o A | Spectral Identification 1 | |
| | 1] IR Spectroscopy Observation | c=0 stretching i.e. oad, |
| | cm' | present. |
| _ b | 3100 - 2900 cm | Sp2) falkyl (-H (sp3) my be present |
| | II] 'H NMR Spectroscopy Observation | Inference present |
| | Total 4 peaks are present in the | in the structure. Aromatic ring is present |
| D) | region 6.5-8.5 ppm | |
| | m) 13 C NMR Spectroscopy Observation | Inference |
| | Total 7 peaks are present | is present. |
| | 4 peaks are present in region | Aromatic ring is present |
| | N)UV spectroscopy Observation | Inference |
| a) | There are 2 peaks in UV spectrum about 2200m | Compound is conjugate |
| | | |

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Teacher's Sign.

EXPERIMENT: 17 H NMR spectrum Inherence Observation Total 4 type of proton present of Total 4 peaks are present Aromatic ring present b) 2 peaks at 6.5-8.5 ppm Para-disubstituted of There are 2 doublets in aromatic ring present. aromatic region. Due to CH3 adjacent to O d) Singlet peak at 3.9 ppm Due to CH3 at aromatic e) Singlet peak at 2.5 ppm Observation Inference 7 type of carbon is present a) Total 7 peaks are present Aromatic ring is present b) 4 peaks are present in CH region 100-170 ppm Due to ester carbon atom c) Signal at 169 ppm Para disubstituted benzere d) There are 4 peaks in ring present aromatic region ie. 100-170 ppm 2 quaternary c-atom present e) Out of 4 aromatic signal. in aromatic ring 2 are missing in DEPT 135 Due to solvent f) Signal at 79 ppm in proton decoupled spectrum. 3) Signal at 52 ppm in DEPT 135 Due to CH3 adjacent to 0 h) Signal at 22 ppm in DEPTISS Due to CH3 at aromatic bonyl NUV Spectrum ,3) Inference Observation Compound is conjugate a) 2 peak in UV at 220nm tic Due to 11 -> TI Fransition b) Amax 238 nm (10910 &4.2) Due to n > TI + transition 1) Amax 281 nm (109,0 82.7) ent Teacher's Sign. :

| Observation | Inference |
|--------------------------|-----------|
| a) Molecular for peak M+ | m/e = 150 |
| b) Base peak | m/e = 119 |

111

d Tota

Then

d) Sing

111]

b) 4 p

c) Sign

170

2 0

e) 00-

B) Determination of molecular formula Rule of 13: M = n+r

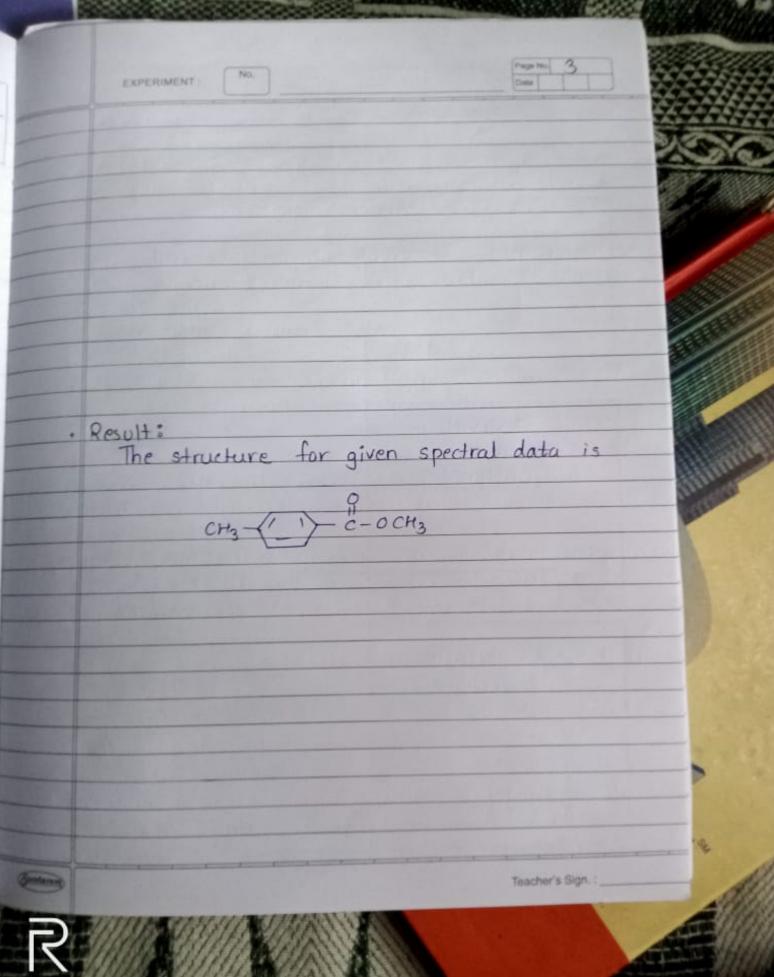
No. of carbon =
$$\frac{M}{13} = \frac{150}{13} = 11$$

: Base formula : Cn Hn+r = C11H11+7 = C11H18

| Molecular | | Recision of adding | Substract equivalent | | IHD |
|-----------|----------|---------------------|----------------------|----------|-----|
| CuHis | 01 15 11 | | - | CIIHIR | 3 |
| CII HIS | 0 | Carbony I group | CH4 | C10 H140 | 4 |
| C10 H140 | 0 | IHD is insufficient | CH4 | Cg H10O2 | 5 |

:. Molecular formula is Cotto02

| c] Detail Observation I] IR spectrum | CHANGE THE PARTY OF THE PARTY. |
|--|--|
| Observation | Inference |
| a) Strong observation at 1724cm | c=o stretching i.e. carbonyl group is present. |
| b) Medium observation at region 3100-2900 cm ⁻¹ | с-и stretching alky1(sp3) present. |
| d Peak at 1600-1610 cm-1 | c=c stretching, aromatic ring is present. |
| distrong observation near 1100-1300 | c-o stretching is present |



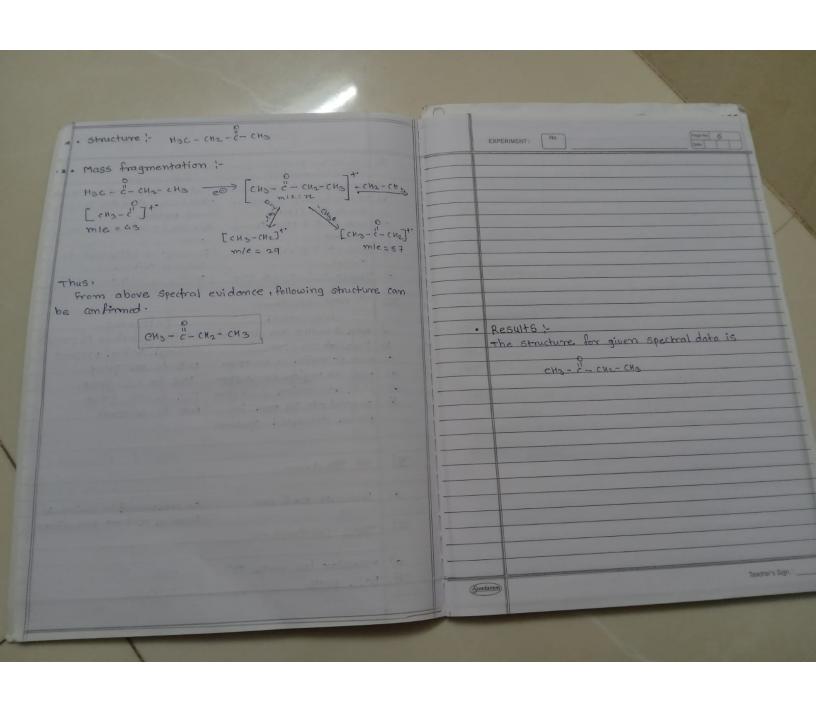
Shot on realme U1

| 1 | | EXPERIMENT: No. | Page No. 4 |
|------------|------|--|--|
| | 0 | Spectral identification | No 1-2 |
| | AI | preliminary observation | |
| | I | TR spectroscopy :- | The state of the s |
| | | Observation | |
| | U | strong observation at | carbonyl group present |
| h | | | 01011 |
| - | | Medium observation at | |
| | | | present. |
| I | -3 | 1H NMR Spectroscopy | PARENTAL LIB WELLISHT |
| | | observation | Inference |
| a |) - | Total 3 peaks are obser- | 3 types of protons are |
| | | ved | present. |
| b) |) - | There is no peak region | This is an aliphatic |
| | - 11 | to 6.5-8.5 ppm | compound. |
| | - | and the second second | Lymadian - C - CHICAL |
| TI | 1 | 13 C NMR Spectroscopy | 3 |
| | 1 | Observation | Inference |
| a) | 1- | total a peaks are obser | we a type s of combon one |
| | - 11 | d | present. |
| (d | | Peak at 210 ppm | combonyl carbon is present |
| | | O p | The Male release Township : Cal |
| IV] | | UV spectroscopy :- | - I construenced Dated Ti |
| | - | observation | Inference |
| ^ | | | so compound is conjugated. |
| 0) | P | teals at 065 mm | Paradal in publication and the |
| ما | | THE COLUMN THE PARTY OF THE PAR | |
| 工 | 1 | mass spectrum | Inference |
| (89 | | observation | |
| a) | p | note cular ion peak Mt | YNIC = 12 |
| b) | . P | base peals | |
| (Sundaram) | | a sala production of a secondary | Teacher's Sign.: |
| | 1 | | |

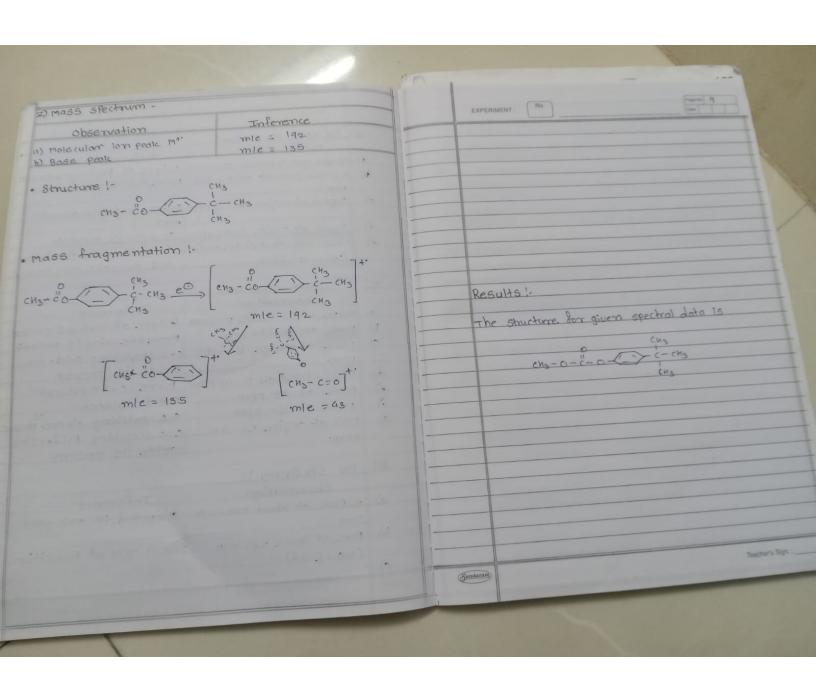
| | | M = 72 = | | | | п] 1 | H NMR spectrum 1- | Inference | |
|--|--------------|---------------------|----------------------|----------------------------------|-----------------------------|--|---|---|--|
| No. of Hydrogen M- CC × 12) = 72-C5×12) = 72-60 = 12 .: Base formula = Cn Hntr = C6Hst7 = C5H12 | | | | | | a) Total 3 peoms are observed 3 type of hydrogen are present b) There is no peak region this is an aliphatic compa- | | | |
| | | | | | | | c) peak at 2.4 ppm shows so- CH2 is adjustent a | | |
| ·· base | ormata. | | | | | (k | peak at 2 ppm shows | So - cha: is adjeasent to | |
| 101e cular | Add | Reason of Adding | substract equivalent | modified molecular formula | IHD | | Triplet peak at 0.8 ppm | so-cus is a dissecont to-cus | |
| C5H12 | A . TO | 1200 THE 22 OF | 12 17 STOR | C5H12 | 2+ y-y 5+1-12 | | 13c NMR Spectrum observation | Inference is present | |
| 12254 | The State of | name of | Tara Insti | CaH80 | 6-6 | 6) | peak at 210 ppm. peak at region 30-40 pp | m. Duk to the group | |
| H12 | 0 | Gronbounal | CHA | Cango | x+1-4 4+1-8 | | peak at region 20-30 F | bbw bre to - che dronk | |
| and and | 2777 | | | | 5-4 | (4. | singnal at 79 ppm in proton decoupled spec | n Due to solvern | |
| Molecula | ar formi | ila ; Cull | 90 | | | | UN spectrum - | | |
| Detail (| bservat | ion it | T | nference | un (n | 1-0 | a) Peak at 265 mm | so compound is conjugated because π → π* transition | |
| ng obser | vation at | 1718 cm | carbonyl | group & | acid, Icetone | | Mass Spectrum - | 100 | |
| ium obse | ervation | at zooocmi | C- H Stret | ching all | (y) (5p3) | - | a) molecular ion peaks b) Base peaks | mle = | |
| | 0-1200 | | , , , | lean actor | ror acid, le may be prod | Sun | daram | ISBUM 9 - I | |

| al mai | iss spectrum !- | | | | | | | (No | | (Page to) 9. |
|-----------|-----------------------------|--|-------------|---------------|----------------------|------|----------|------------------|---------------------|--|
| 20 | observation | | 7 | Inference | | | EX | KPERIMENT: No. | | Page No. 8 |
| 200100 | clar ion peak Mt | +, | | le = 192 | | EE T | 1 H | NMR Spector | um !- | |
| b) Base | Deal! | | ml | e = 135 | 17 | | | observation | | Inference. |
| | | | | | 4-17 | | | | | type of prydrogen present |
| · Determ | ination of mole | ecular for | mula | 1- | | p) | | | + G5-8.5 A | romatic ring is present |
| . Rule o | of 13 1- M= = 1 | nta | | | | | bbu | n- | 1 | in in the to committee |
| | | | | | 1 | c) | Sig | mal as region | Q-2-5 Ppm 3 | o-chaig due to arromatic |
| | $corbon = \frac{M}{13} = -$ | | | 100 | | 17 | cio | -1 -4 orain | 1-1-5 ppm | 30 - CH3 is present. |
| no. of H | Hydrogen = M- | (CX12) | = 192- | (14×12) | | - 0) | 7h | mai at region | at in region | so it is pora disubsitu- |
| | | | = 192 - | 162 | Carlotte V | | 6 | .5 - 8.5 Ppm. | 2 | ted aromatic sing present |
| | | _ | 11.0+1 | - Ciathian | LIDE CIAMON | | - | .9-0-0 | | |
| . Base | formula = Contr | ntr = C | anian | 0 | 18 - Ciunza | - m7 | 1 15 | 3 C NMR SPE | chum' | The state of the s |
| - | | 0 6 | 1 shoot | modified | | | | a la c assignati | im | Inference |
| molecular | | on of ou | uivalent | Pomula | IHD | - | 1 4 | ere are 8 pe | eales present | & type of combons present |
| Formula | Element addir | ing equ | di von | · ClaH24 | n+-1 = 4/2 | - PJ |) 01 | eak at 110-10 | 66 PPM | Hrom and allique |
| CIUHZU | - 7 | - | | Clanza | =14+1=2412 | 6 | 3 6 | peak at range | ge 160-180 | c-o stretching acid, ester |
| | | | | | = 15 - 12 | - | - | | | amide 15 present |
| | | | | | = 3 | 1 | 0 1 | Peals at regio | on 30-40 ppr | m Arene c-Ar present |
| 14424 | o carbo | onyl ·cr | H4 | Cig H200 | 7 - 4 | - | 2 | peals at 77 | - ppm | DUT TO DOITE |
| (41124 | grou | The state of the s | | 1 2 2 2 | V | 1 2 | 7 | peals at 150 | c ppm | c=6 shetching alkene p |
| | | - | | | | , di | | peak at region | m 20-30 | c=o Shetching Acid, es |
| 11 40 | THD is | s in- ch | 14 | C12H16O2 | 5 | - 5 | | bbw. | | amide is present. |
| 13H260 | Suffic | icient | | | | - | | PY | | |
| - 1 | cular formula | - C12 | MI602 | | | | Til | UU spector | um 1- | |
| · Molec | ular tormula | - | | | | | | | | Inference |
| letail or | bservation 1- | | | | | - | - | 2-11-04 | about 260- | 270 compound is conjuga |
| R Spect | trum !- | | | Inferen | ce | - | a)_ | 2 Peal a | atom. | |
| Ob: | servation | * | 100 | at lating of | carbony I grp presen | nt - | | nm | a Ca mm | Due to T > T* trans |
| cale at 1 | 1766 cm-1 | | 17 17 | spetching - | (1) can3) preser | A 1 | p) | Peak at Am | nax 762 | |
| on ohe | servation at 30 | 000 cm | C-H S | tretching an | 11(4) (5p3) present | mat. | | C10910 8. 2.6 | 6) | |
| LOUIS COO | 1500 - 1600 cm | -1 | | stretching | , benzene prese | | 0) | | | Teacher's Sig |
| eals at | 1000 - 1000 CW | -1 | 0-0 5 | stretching 11 | ether, ester | 1 | Sundaran | in) | | |
| realc at | 1200-1300 cm | | | | | ~ | | | | |
| | | | C-HS | metching P | porra Subsituted. | | | | Manager of the last | |
| eall at | 120 cm-1 | | colores and | | | | | | | |

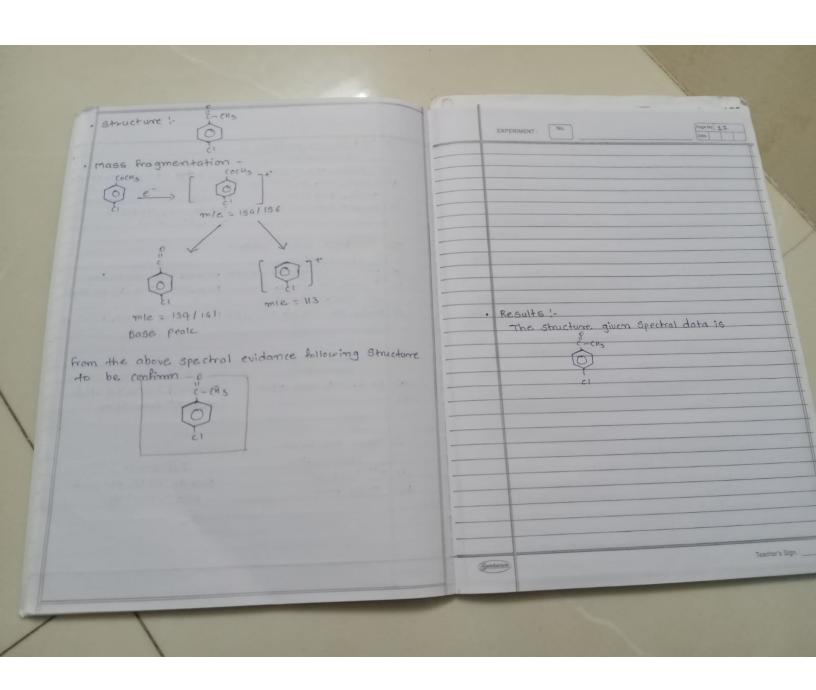
| 1 | | |
|----------------|--|--|
| | | |
| | EXPERIMENT: No. | Page No. 7 |
| | Spectral identification | Date |
| [A] | | No - 3 |
| T) | TR - spectroscopy - | Name of the last o |
| | Observation | |
| a)_ | strong observation at | Inference . |
| | 1766 cm | group is present. |
| p) | strong observation at | c-H shetching allyl (sp3) |
| | 3000 cm1 | present. |
| | 1 | The same of the sa |
| [II | 1 H NMR Spectroscopy | |
| 1- | -1 | Inference. |
| (1) | There are a peaks are | Total a type of proton |
| 1 | observed | are present. |
| (d | a peaks present at region | Aromatic ring may be |
| 818 | 6.5'-8.5 ppm. | present |
| | 7.07.00 | |
| (III | "13c NMR spectroscopy | |
| | observation | Inference |
| (2) | There are 8 peales are | Total & type of combon |
| | observed | are present. |
| 67 | peak at ronge 110-160 | Aromatic ring may be |
| - 07 | • | present. |
| | ppm. | - Physical resistance is |
| | UN spectrum !- | -F colitate and the base 1- |
| | | Inference |
| | observation | |
| a | peak at 262 nm & 269 nm | 1 Compound may |
| - | and and dealers a " | conjugated. |
| | I will be a laborate of a laborate | |
| Hamilton T. J. | The second second | Torrest and the second |
| and the second | - | The state of the s |
| - | | Teacher's Sign.: |
| (Sundaram) | +12 SE 20 12 12 12 12 12 12 12 12 12 12 12 12 12 | The second second |
| | la contract of the | |



| M | | |
|-----------|--------------------------|--|
| | EXPERIMENT: No. | Page No. 10 |
| | Spectral identification | |
| AJ | The many observations | No:-9 |
| II | IR Spectroscopy | |
| | Observation | Inferrence |
| (a) | strong observation at | 1 mremme |
| | 1690 cm-1 | present. |
| <u>(d</u> | Medium observation at | c- o stretching alcohal ether |
| | 1300 - 1200 cmi | may be present. |
| | Color to be posted for a | |
| 正 | H NMR Spectroscopy - | |
| | observation. | Inference |
| a) | | 5 type of proton is presen |
| | ent. | mt. |
| b) | signal at region 7-8 | |
| | | present. |
| | bbw. | |
| 7 | 130 | _ |
| | 13C NMR Spectnoscopy | Inference |
| | observation | 0 \ |
| 2 | Total 6 peaks are prese | - 6 type of the |
| | nt. | Present. |
| (0) | a peaks are present at | Aromatic ring may be |
| | region 120-160. | present. |
| | region | District Control of the Control of t |
| | 0.0 -1 -1-00 1- | |
| TÜ | UV Spectrum! | Inference |
| | observation | compound may be conjug- |
| -0 | peales at 255 mm | |
| a) | PEME | ated. |
| Language | The second second | in the second se |
| maden . | marke party | |
| | torograd and toroge | |
| | I consider the second | Teacher's Sign : |
| | The Intelligible prof | The state of the s |
| Sundaram | B HO BRUNESCO . | |
| | | |

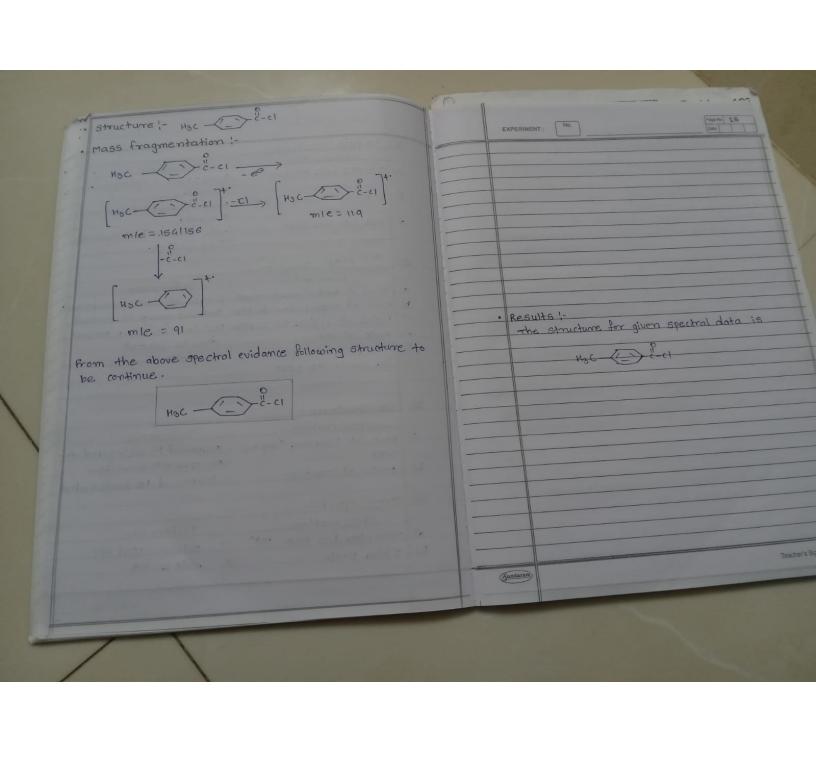


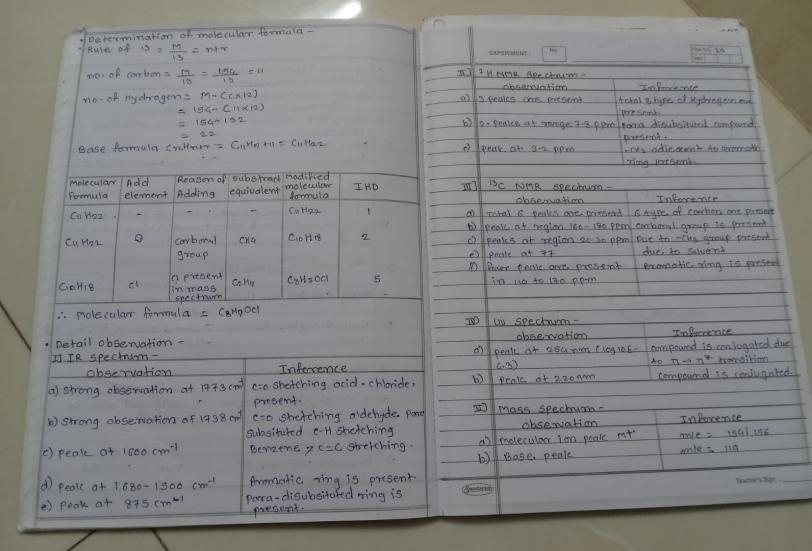
| Observation | Inference | EXPERIMENT; No. | Page to 2.4 |
|----------------------------------|--|---------------------------|-----------------------------------|
| a) Molecular ion peals mt | m1 = 154/156 | ID 1 H NMR Spectroscopy | (40) |
| b) Base peak | mle = 139/1a1 | observation | Inference |
| | 0 - 1 1 | a) 3 peaks one observed | Total 3 type of hydrogen press |
| B) Determination of mole cul | ar tomula; | b) 2 peaks are present in | iniai state of interesting these |
| Rule of 13 :- M = n+r | | region 7-8 ppm | Aromatic ring is present |
| are all seeds on 150 | -11 | c) singlet peak at 2.6 p | pm Que to - cha attach? |
| No. of carbon 17 = 154 | | | aromatic ring. |
| No. of Hydrogen M-CCX12) | = 154 - (11×12) | 7 12 | |
| = 154- | 132 | III) 'SC NMR Spectroso | |
| - 22 | The state of the s | observation | Inference |
| Base formula = cn Hm +r = C11 H | - Culton | | 200 pp wetone c-o stretching |
| | | | 0 - Aromatic ring is present |
| molecular Add Reason of subs | tract modified | 160 ppm. | |
| formula Element Adding equi | valent molecular IHD | _ c) peals at - cus at 20 | -30 pp Due to - cus attach to - c |
| | | | |
| C11 H22 | | IV) UU spectrum - | |
| | C Van | Observation | Interence. |
| CII H22 0 combony) CHO | 1 C10 H180 2 | | |
| group | 100 3000 1000 1000 1000 | a) peak at 225 pp | m compound is imply and |
| present in | | | The Management |
| | tu C8470.C1 5 | - | |
| mass specho | | | |
| notecular formula = C&HAOCI | | w) Mass spectrum - | - 0 |
| Detaril observation - | | observation | Informa ce |
| IR Spectrum - | | a) Mt. 1841186 | due to clis prese |
| | Inference | b) Base peak | mle = 139/191 |
| observation | | | |
| strong observation at 1690 cm c | =0 company I group is present | | |
| medium observation at 10 | =0 stretching alcoholication | | |
| 200-1200 cm-1 | hay be present. | | |
| , | c shetching benzene present | | Teacher's |
| Ted le | ra substituted c-4 stretching | Sundaram | |
| peals at 820 cm ⁻¹ Pa | ra substituted en offerently | | THE RESERVE TO SECOND |



| | EXPERIMENT: No. Paga No. 13 |
|---------|--|
| A | Spectral identification No-5 preliminary observation - TI TR spectroscopy - |
| a) | strong observation at corbonyl c=0 stretching |
| b) | strong observation at combonyl c=0 stretching combo- 1738 cm ⁻¹ xylic acid, ester present |
| | 1 H NMR spectroscopy - observation Inference |
| a) | total 3 peaks one present 3 type of proton present |
| | pedic at region 7-8 ppm Aromatic ring may be present. |
| | 10 |
| | Observation Inference |
| a) | Total & peaks are present total 6 type of combon pres |
| b) | peale at region 160-180 combonyl c=0 Stretching acides ppm. esternamide present. |
| Iv) | UN Spectrum- |
| F - 1-1 | observation Intereste |
| 2 | a la at about 220 mm 60 compound may |
| - | The second secon |
| I | mass spectrum- Informace |
| | observation mt mle = 154/156 |
| 0) | Molecular peals ion mt mle = 199 |
| (d | Base pedic Teacher's Sign.: |

Sundaram





(Sundaram)

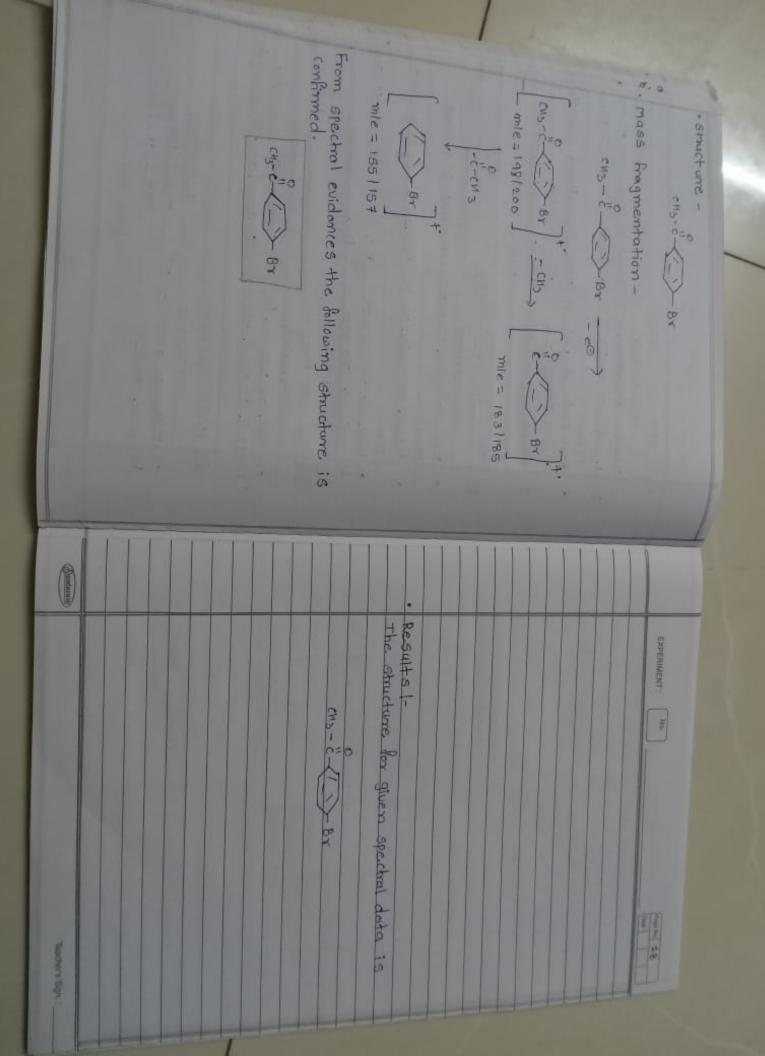
Teacher's Sign. :

| | Observa | ation | | Inferen | |
|--|-------------------------------|-----------------------------------|-----------------------|----------------------|------------|
| a) mole | ecular ion | Peak mt. | 12 | 116 = 198 12 | |
| h) Bose | s Peak | | | e = 183/19 | |
| no. of | of 18 = f carbon tydrog | | 198 = 1 (CX12) = 1 | | |
| | Add | | [Substan | molecular formula | IND" |
| Cig Hig | - | | - | Cushia | 7 |
| CISUIS | 0 | group | сна | CiaHiaO | 8 |
| Ciahigo . | Dr. | er present in mass spectrum | C6 H7 | CEHAOBY | 5 |
| Molecular Detail obsert II IR Spectr | vation - um - | | , | | 27 16 |
| | Nation | | | nferrence | |
|) strong obse cm-1 | | | | tching ke | tone er |
| medium obs | | | | etching b | penzeme |
| peak at regi | | | | tehing ket | rone, alde |
| Decision of the same | peak so | 00-2900 | C-H Streke | hing of sp | 3 carbon |

1 mass spectrum -

| | EXPERIMENT No. | Francisco 17 |
|-----------|---|--|
| IJ | 1 H NMR spectroscopy - | |
| _ | Observation | Inference |
| | 3 leaks one present 3 | type of hydrogen proceed |
| | pem pem | mmatic ring present |
| -0 | Two peaks doublet at po | ma-disubstituted dramatic |
| 15 | region 7-8 ppm. | ing present |
| 42 | | ue de -cha at arramatic |
| | | and present. |
| /m | 15C NMR SPECTIOSCOPY | 1 |
| | | Inference |
| 6) | peals at region 160-200 | Interence |
| | PPm. | |
| Cd | a peak at region 120-160 | Aromatic ring is present |
| | PPm | minates and is besen - |
| 9 | peak at 20-50 ppm | Ove to - CMs at aromatic ring ! |
| d) | The second control of | Due to solvent |
| - 37 | | |
| [ÚI | UV spectrum - | and the second second |
| | observation | Inforence |
| a) | peak at 259 mm (109 8 6.2 | compound is conjugate. |
| (al | peak at above 220 mm | compound may be conjugate |
| | | the second secon |
| I) | Mass spertrum - | |
| | observation | Interence |
| a) | molecular peak ion m | mle = 1981200 |
| | Base peak | mle = 1831185 |
| | | 1016 - 1801 193 |
| | | |
| 1 | | |
| Quedurais | | Teacher's Sign.: |

| F 8 8 F 8 | Speckal identification No preliminary observation No Observation Chang peak of region c-to redium peak at region c-th soco - 2900 cm ⁻¹ LH NMR Speckroscopy - Observation LH NMR Speckroscopy - Observation There one 4 peaks rete | No - 7 Inference c-o shetching ketone & c-H shetching alkeme may be present. Triference Troference Troference Total bour type of preten |
|------------|--|--|
| 9 H G | Truso 08-5-13C 1 | |
| P 6 | UN spectrum - observation peals at above 220 nm | Inference compound may be conjugated |
| Quadara rg | The Control of the Co | Teacher's Sign. : |



Structure !- Pac-E- o () CH3

mass fragmentation!

confirmed evidence the following structure is

Mac - 2 - 0 - 12 - 0 M3

| Quadanan | | |
|----------------------|---|------------------|
| | Results 1- The formula for given spectral data is | EXPERIMENT: (No. |
| Telepither's Sign. : | tral data is | 24 Sept. 24 |

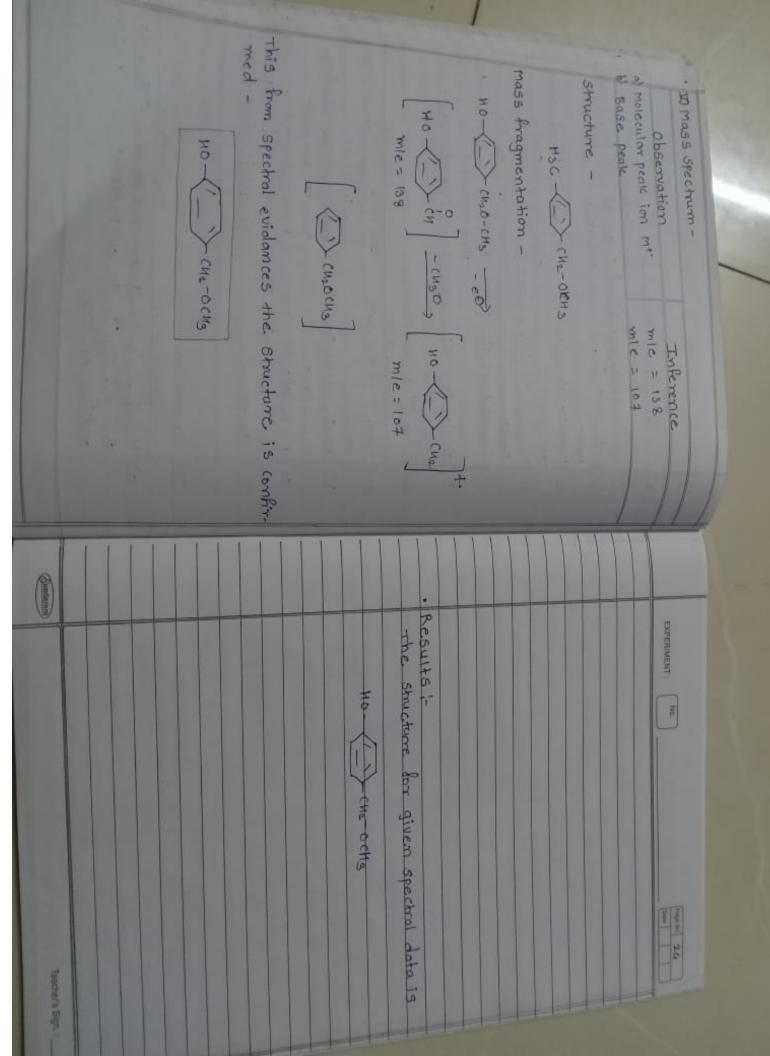
| MIN | ass spe | chrum- | | | |
|-----------|------------|--------------|-----------|---|--------------|
| | | 1 ton | | Inforence | - |
| 1 | leculor lo | n peals m | | mie = 150 | |
| 1 W 80 | se peak | | | mle = 108 | |
| 102 pm | 00 1 | | | mula le | |
| · Deter | mination | of mole | ular 10 | mata. | |
| Rule | of 13 = | 13 = nx | 9. | | |
| 20.01 | corbon= | 10 = 15 | 0 = 11 | | 72. 11 |
| 0 | un dece e | - Ma | (CX12) | = 150 - (11× | 12) 5 |
| 1/0-01 | nyoneg | E113 - 111 | | | |
| 12. | 0 1 | C.V | Calland | = 18 = C (1 H 18 | |
| | | | | | |
| molecular | Add | Reason of | Subscritt | ion modified molecular | THD |
| formula | element | adding | Equivale | nt moleculor formula | 7.110 |
| CHHIS | 0.5 | | - | CIHIS | 3 |
| | | | | | -4 |
| Ca H18 | 0 | carbony | CN4 | CioHia | |
| | | compound | | | |
| | | IND is | · ch- | C4 H1002 | 5 |
| CioHiao | 0 | in sullicion | 0114 | -41110-2 | |
| . molecul | ar formi | ula = . Cat | 11002 | | |
| etail obs | | | | | |
| IR Spe | | | | | |
| | wation | | | Inference | e |
| observe. | at strong | peals at | C=0 8 | Shetchina K | etone, aldeh |
| 160 cm-1 | | 1 | pres | | |
| redium | peals at | P 3000 - | | | allcame pre |
| 1900 cm | | | | | |
| dium pe | | 500 cm-1 | c-o s | itetchina e | stor keton |
| | | | pres | ~ | |
| | | | | CONTRACTOR OF THE PARTY OF THE | |

C

| | EXPERIMENT: Min. | Fraga Ref. 20 |
|------|------------------------------|----------------------------|
| | Observation | Inference |
| - | Total 6 peaks one present 6+ | use of hydrogen present |
| 2.3 | and a mar les - the point | |
| 2 | Pour people of 120-160 ppm H | romatic mng process |
| 92 | people at region 20-30 ppm. | C-O SHILLDING |
| () | peak at +77 ppm C | ue to savant |
| | | |
| | 2 4 NMR Spectroscopy - | |
| III | -hae-making | Faterence |
| - | There one a peak present | a type of hydrogen are |
| - 41 | There are after | One Secolt: |
| 17 | o peaks at region 7-75 | cac Shetching benzeme |
| | | more and |
| - | Donplet beak of 18 6bu | come-disubstituted armatic |
| | | |
| Tv |) UV Spechum- | |
| | observation | Inference |
| a' | | Due: to T > 12 homsilion |
| a | (logne 2.6) | |
| | 1100 pt +100 | compound is consugate |
| _b) | peak at above 220 mm | |
| | J mass spectrum - | |
| | 12.0 | Inference |
| | observation | |
| | a) molecular ion peak mi | 100 |
| | b) Base peak | mle = 188 |
| 0 | | Teachure Sign : |

| Frage No. 2-2. | - 8 Inference | present. C-0 shetching may be present | Total & peaks arbype of | present. | Total & tope of carhon | present. | Inference | hydroxy group Present | | romence. | mle= 158 | Teacher's Sign.: |
|----------------|--|---------------------------------------|-------------------------------------|-------------------------|-------------------------|-------------|-------------------|-------------------------------|--------------------|-------------|--------------|------------------|
| EXPERIMENT: 8 | Al Preliminary observation - I TR speckerscopy - Observation | peals at 1085 c | a) They are five peak are observed. | b) peale at region 6.5- | a) There one speaks are | peak at 110 | Tril UN spectrum- | a) logio e = 3.4 .0.v spechum | II mass spectrum - | observation | b) Base Peak | |

| Rule o | of 18 = 1 | of molecular | | | | | EXPERIMENT: No. | Proc No. 2.5 |
|---|-----------|--------------------------------|--|--|----------|-----------|---|--|
| no ol | Combon | $=\frac{M}{13}=\frac{138}{18}$ | = 10 | | | CII. | 1H NMR Spectrum - | Inference |
| no of | Hydroge | n= M-Cc> | 10 × 12) | | | (A) | Total speak one observed | stype of hydrogen present |
| | | = 18 | | | | (2) | epon. Doublet at orgina 6.5 - | parra - disubstituted arron- |
| Base | formula | Continue = (| C1011010 | | - | 17 | 9.5 ppm. | atic ring present. |
| molecular Formula | Add | Reason of adding | substract | modified molecular formula | IHD | | ppm- | |
| Cio His | - | - | - 1. | CIOHIS | 2 | | | ring present. Due to -cus adjessmit + 0 0 |
| CioHis | 0 | combonyl | cn4 | Callia | 3 | | 13 C MMR spectrum | |
| СаИ14 . | 0 | Hydroxy group | сна | C8H1002 | 5 | <u>a)</u> | Total 6 peaks one | are present |
| Molecular Detail obo I] IR- St | servatio | |)2 | | | 0 | peak at region 110. 150 ppm. peak at 7t ppm peak at region to 80 ppm. | may be present |
| Obse | mation | | Inh | mence | | | | |
| Strong peats sharp peats redium peats sooo - 2900 edium peats oo - 3000 | cat 108 | gion | Arr- OH pl C-O Streto present. CH (SP) S group is C-H Stretch | nemol pre ching ething stretching present ing -cu: | er group | | Observation log & = 3.4 uv spe changed significantle addition of base | Chum Due to TI -> Theorem |
| diam peak | | | is presen c=c shetc presen | hing ben | zeme | Supdans | | Teamer's Sign. |



| | EXPERIMENT: No. | Page No. 25 |
|--------|--------------------------|--|
| | · Spectral idealine | Date |
| | A) preliminary observa | No-9 |
| | I) TR - spectroscopy - | tion - |
| | Observation | 7-0 |
| 11 | a) Strong observation at | Inference |
| 11 | 2209 cm | Present |
| | b) peak at 1500-1600 cmi | c=c shetching benzeme |
| - | , | may be present. |
| - | T7 1 | |
| - | II) 2H NMR Spectroscopy | _ |
| | observation | Inference |
| - | a) There one 3 peaks | Total 3 types of hydro- |
| _ | observed | gen present |
| k |) peak of 6.5 - 8.5 | poma - disubsituted arrom- |
| | | atic ring present |
| | | Turning to the second |
| Ш | 13C NMR Spectroscop | 7 - |
| | observation | |
| a) | There 6 peaks are | Inference |
| | observed | Total 6 type of combons |
| 1-1 | | me present. |
| (0) | peak at region 110- | Aromatic ring may be |
| | 160 ppm. | present. |
| | | and he was to be the state of the |
| WI | Mass Spectrum - | |
| | observation | Interence |
| 27 | | |
| a) | Molecular peak ion | mle = 146 |
| - 1 | Wt. | Language Lan |
| (d. | Base peak | mle = 145 |
| | - Anna Carry | |
| | a to assume to see | |
| | | |
| odaram | | * Teacher's Sign. : |
| | 1 - 3 111 3 0 3 | |

(Martabana) Bose peak 501 = 2/m a) molecular peace ion mir observation Interester TO Mass spectrum nitrogen of peals of orgins 25-60 ppm pue to -che offached to one present to toneary and extent (d maron 20 39 pt 2 lator and there is peake one mitamsedo marshal 15 C NMR Spectorum to miking of of freely at rigition 2-3.5 ppm but to the adjusterent of peak of region 6.8-8.9 migre of peak (d 2.6 mmm

 $- \frac{1}{2} = \frac{1}{2} = \frac{1}{1} = \frac{1}{2} = \frac{$

11 = 1 = 10 = 000 to .on

(51 × 1) - 201 = 10 = 000 to .on

(51 × 1) - 201 = 000 to .on

Base formula = chattar = Chimes as as :.

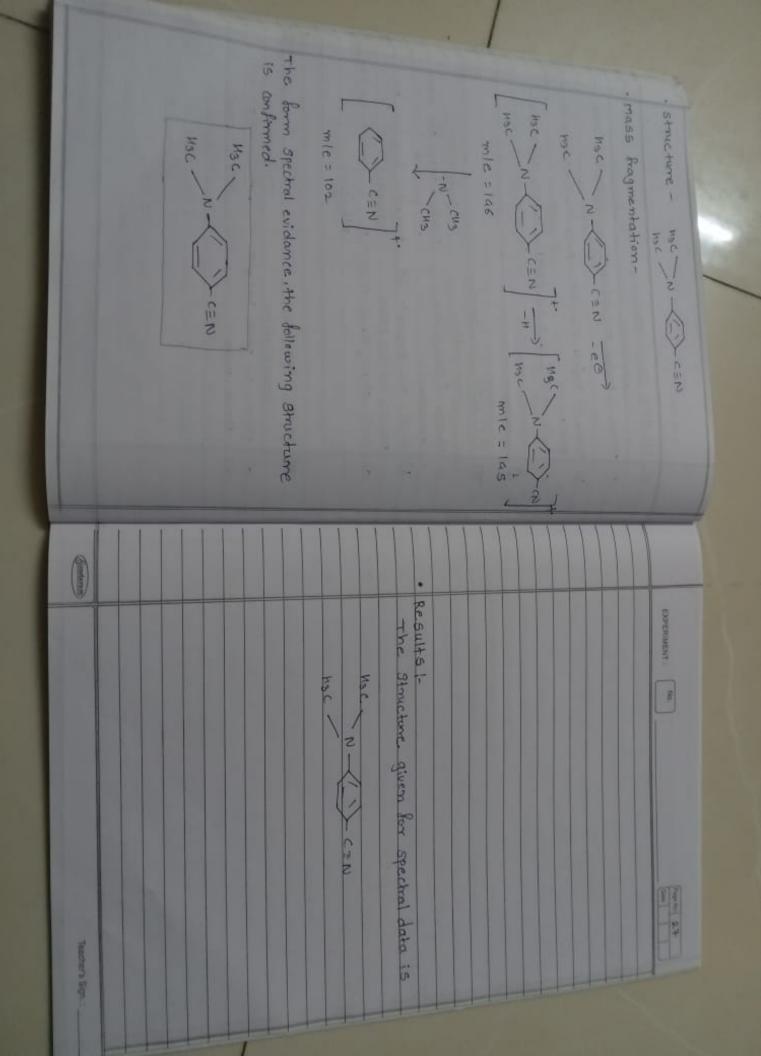
| 9 | CHIONS | CNA | ei ant monthioism | 01. | Nelhan |
|-----|-----------------------------------|----------|----------------------|----------------|-----------|
| 5 % | Well Hold | -cMo | Stintin Stintin | 10 | CII NI4 |
| 5 | CILMIG | - | | 4 | - PIH IID |
| THD | Amolecular Amolecular Amula | ednivale | Regions | pp4 framals | Molecular |

Turange be present.

ei sing benzene is presene is present present. Pore disubstituted aramatic ving present.

observation - netail observation - netain observation at a strong observation at a so of continum observation at 1600 - 1600 cm⁻¹

1) strong peak at 3000 - 2900 emil



| | EXPERIMENT: No. | Page No. 28 |
|--------|--|--|
| | · Spectral identification N | 0-10 |
| | Al preliminary observation- | |
| | I TR Spectroscopy | |
| | observation | Inference |
| _ a |) strong observation at | C-H stretching alleane |
| | 3500 cm | may be present |
| - b | medium observation at | c=c smetching benzene |
| | 1900 - 1500 cm-1 | may be present |
| | 7 111 Nmn co-1 co | |
| |] IH NMR Spectroscopy- | T P |
| 1 | observation | Interence |
| a) | Two peaks are observed | Two type of protons |
| | | one present. |
| b) | peak at 6-8 ppm. | Ammatic ming may be |
| | | present. |
| 2 | 13 - | |
| 11] | | |
| | observation | Interence |
| a) | a peaks one observed. | a types of combon |
| | | one present. |
| 6 | peak at 110-160 ppm. | Aromatic ring may |
| -0/ | Trace of the state | be present. |
| | | |
| | On a seal seal parameters | |
| [UI | UV spectrum- | |
| | observation | Inference |
| (0) | peak are about 220 mm | compound may be |
| | A language of the second | conjugated. |
| | | and the state of t |
| | | The second second |
| | THE RESERVE THE PARTY OF THE PA | |
| | | |
| ndaram | Ban warm notice | Teacher's Sign. : |

| - ARP EVANSENT | a) shang observation at c-H stretching alkane is 3000 cm ⁻¹ b) Medium observation at mono-subsituted c-H stretching one conditions at major present conditions at major present conditions are present conditions. See cm ⁻¹ ching erromatic ging present conditions are given to make the stretching one mother conditions. See cm ⁻¹ cm ⁻¹ cm ⁻¹ cm ⁻¹ characteristics conditions are present conditions are given to make the stretching one mother conditions are given to make the stretching one mother conditions are given to make the stretching one mother conditions are given to make the stretching one mother conditions are given to make the stretching one mother conditions are given to make the stretching one conditions are given to make the stretching of the stretching one conditions are given to make the stretching of the stretching |
|--|--|
| a) Mase Specthum Observation (a) Mase peak ian mt (b) Base peak | - netail observation - |
| Deschum- Obsernation Inference Obsernation Tolerence Operate at above as a mm compound is conjugated. | Base dominio : chimin = clutiche = clutic |
| The spectrum Tolerance of peaks are present to peak are peaks | = 182 - (CXIX) = 182 - (14XIZ) = 182 - (14XIZ) = 181 - (14XIZ) |
| The was spectrum and seek of Hydrogen of Presence on present of the seek of th | a) notecular peole ion b) Base peole Rule of 18 = $\frac{11}{18}$ = 19 Rule of 18 = $\frac{11}{18}$ = 17 $\frac{281}{18}$ = $\frac{11}{18}$ = 10 no. of carbon = $\frac{11}{18}$ = $\frac{11}{18}$ = 10 |
| EXPERIMENT: No. | -mutosge seem (# sar = sim nothousedo |

| Mass spectrum | |
|------------------------|-----------|
| Observation | Inference |
| Molecular ion peak Mt. | m/e = 160 |
| Base peak | m/e = 119 |

Thus, from above spectral evidence, the following structure can be confirmed.

